Scottish internal migration, 1812-1820: interfacing database and computer graphics packages

Tidswell, David P.

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Scottish Internal Migration, 1812-1820: Interfacing Database and Computer Graphics Packages

*David P. Tidswell**

This paper examines the use of the GEOLINK interface between GIMMS and locational data held in the ORACLE RDBMS. The data and the problems they pose for mapping are presented, following by an explanation of how GIMMS and GEOLINK help to approach and resolve some of theses problems.

Suspects and witnesses throughout Scotland gave pre-trial statements to the Scottish High Court of Justiciary and often included details of their past residences and movements. Information from c.900 of these individuals during the 1810's now lies in an ORACLE database and consists of tables for

1) the individuals unique number; case number; name; sex; occupation; crime; age; marital status; nationality; and parents occupation;
2) the location frequented by the deponents which includes a unique location number; the location name; x and y grid references; the type of location; and comments which assist in finding it; and
3) an occurrences table which unites the previous two through the individuals number and their location numbers which are ordered; when known their activities and time spent at each place are included.

The deponents are mostly men under forty years who worked at manual labour. They include a large minority of Irish and moved primarily in the Southwest and Lowlands of Scotland.

An aim of this research was to find a quick, simple method of mapping some of the information from the statements. Some complications which the data present for this aim arc the sometimes large number of migration stages in a particular individual's path. These are difficult to map with GIMMS if each movement is to remain distinct or if several individual's paths (eg, all shoemakers) arc to be mapped together. These can be mapped with GIMMS but require more time to produce than automatic maps.

* Address all communications to David P. Tidswell, University of Edinburgh, Dept. of Geography, Drummond Street, Edinburgh EH8 9XP, Great Britain.
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Other complications included mapping an individual's time at a location (which ranges from one day to forty years) or why they went to a location.

Some informations can be mapped quite easily and automatically. One example is the immediately previous place of origin for any particular location. This leaves out much information about the paths of migrants but provides an immediate understanding of a location's in-migration field.

Data from the occurrences table (ie, individual's number; location numbers each frequented; also x and y grid references for these locations) can be spooled out to a file. For any particular group of individuals by their characteristics, locations frequented, or activities at a location. To map their immediately previous location the data are run through a Fortran program which 1) dumps information not needed for mapping; 2) produces statistics about the data (eg, mean distance); and 3) counts the number of occurrences of a particular pair of x,y grid references then sends that information to the spool file which GEOLINK will read, (see Fig. 1.)

GIMMS is a geo-cartography information system which here takes locational data in the form of polygons and combines these with point data for specific locations to produce maps. It stores the polygon file and can produce it instantly on a graphics terminal or plotter. Several levels of mapping are possible with this system though this paper is mostly concerned with drawing points of origin and line between a destination and those points. Because the type of map produced and the data they use are similar throughout the project the user-friendly interface GEOLINK is needed to save time in map production.

The interface consists of three parts. First, the MASK file specifies how the user is queried, how data are read and how those inputs produce specific output. The MASK file provides a wide range of options which depend on the users answers to questions. For example, the user can be queried about the particular area of the map to show, and the scale and size of the map. The user may also select the particular symbolism for each map, pen colour, title and legend. GEOLINK allows an almost infinite variety of maps with one MASK file.

Second, a spool file provides data to be used by GEOLINK. The data here has been initially taken from the ORACLE database and run through a Fortran program. It is held in rows and columns which allow GEOLINK to access it in the correct order. Third, a target file consists of a source file of commands for a GIMMS run. The MASK file will select only those commands needed to produce the user specified range.

Some examples below from a MASK file show how GIMMS commands (preceded by »*«) are embedded therein and how a particular response by a user producers particular output. GEOLINK commands are preceded by »!« and here are in capitals. The questions are printed on screen as well as

anything preceded by 1PRINT. The words after a query are substituted into the following G1MMS commands where they are preceded by »!«. »1F« or »NOT IF« statements can specify for any value from responses to a query whether or not a GIMMS comman will be carried out and put into the source file.

```
NEWG1MMS
! CM (COMMENT)
! CM MASK FILE
! CM This file spools data from locaiion.dat files
! CM which contain the origins and their occurrences
! CM for a particular destinations
! CM
     •F1LEPARM 11, 'SCOTLAND.GIM', GIMMS, IN
! CM
! CM The user is queried for the name of the plot file.
! QU »Output to plotter or terminal?:« OUTPUT
! IF OUTPUT plotter Plotter p P
     •PLOTPARM PLOTTER
! ENDIF
! CM
! IF OUTPUT terminal TERMINAL t T
     •FILEPARM 6 'GRAPHICS.LIS', TEXT, OUT
     •PLOTPARM T4010 BAUDS 9600
! ENDIF
! QU »Which alphabet for text?:« ALPHA
     *TEXTPARM ALPHABET = !ALPHA *PLOTPROG
     •NEWMAP 27 27 FRAME
```

After further questions about text needs and map format the grid reference data and each origin's number of occurrences arc spooled through GEOLONK. An example portion of a spool file is as follows:

xlocl	ylocl	xloc2	yloc2	occurrences
2580	6650	2330	6210	2
2580	6650	2270	6760	1
2580	6650	2880	6800	1
2580	6650	2970	6680	3

The data file is then described by its columns. Successive spools draw 1) the point of destination; 2) the points of origin by their particular size; and 3) the lines which connect these.

```
! CM First spool of user specified file (!FILE)
! NEWFILE SPOOL IFILE.DAT
! DESCRIBE XLOC1 YLOC1 XLOC2 YLOC2 OCCURRENCES
! READ
     •POINT MAPUNITS IXLOC1 !YLOC1 1
! CM Second spool
! NEWFILE SPOOL IFILE.DAT
```

```
! CM The description of the file remains known.
! BEGINLOOP
! READ
      •POINT MAPUNITS 1XLOC2 IYLOC2 IOCCURRENCES
! ENDLOOP
! CM Third spool
! NEWF1LE SPOOL !FILE.DAT
! CM
•DRAW MAPUNITS
! BEGINLOOP
! READ !XLOC1 1YLOC1 IXLOC2 IYLOC2 /
```

After the user has specified all information needed for the particular map the MASK file can be plotted (if output is not meant for the terminal) and then be restarted for as many maps as are needed. An example of the type of map produced is Figure 2. The maps produced are useful for immediate analysis and give clues to significant patterns of migration. The benefits of GEOLINK as an interface have been touched on briefly here though it has enormous potential for mapping polygon or point data of the same form.

Figure 1

GEOLINK INTERFACE BETWEEN ORACLE AND GIMMS

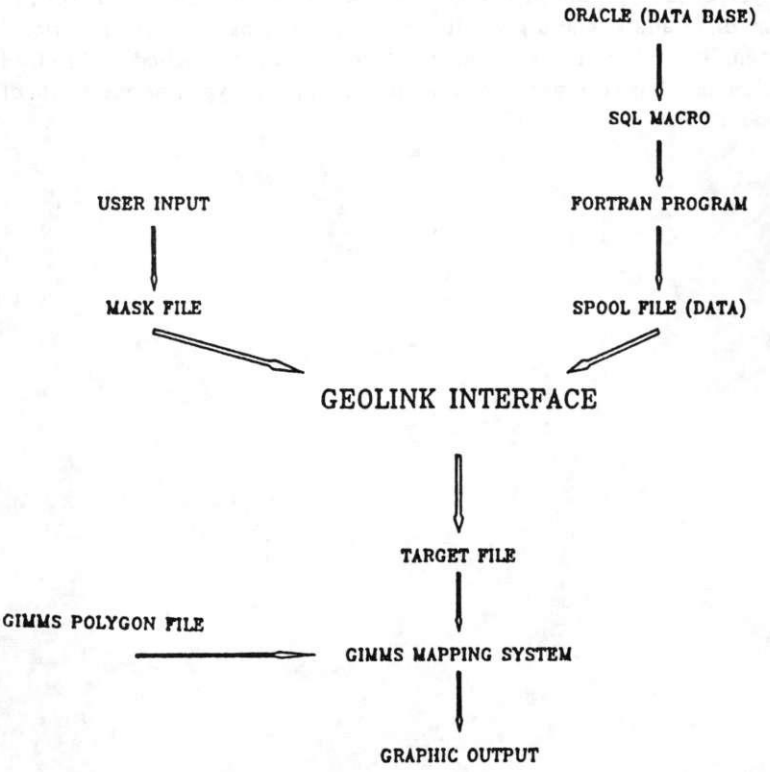
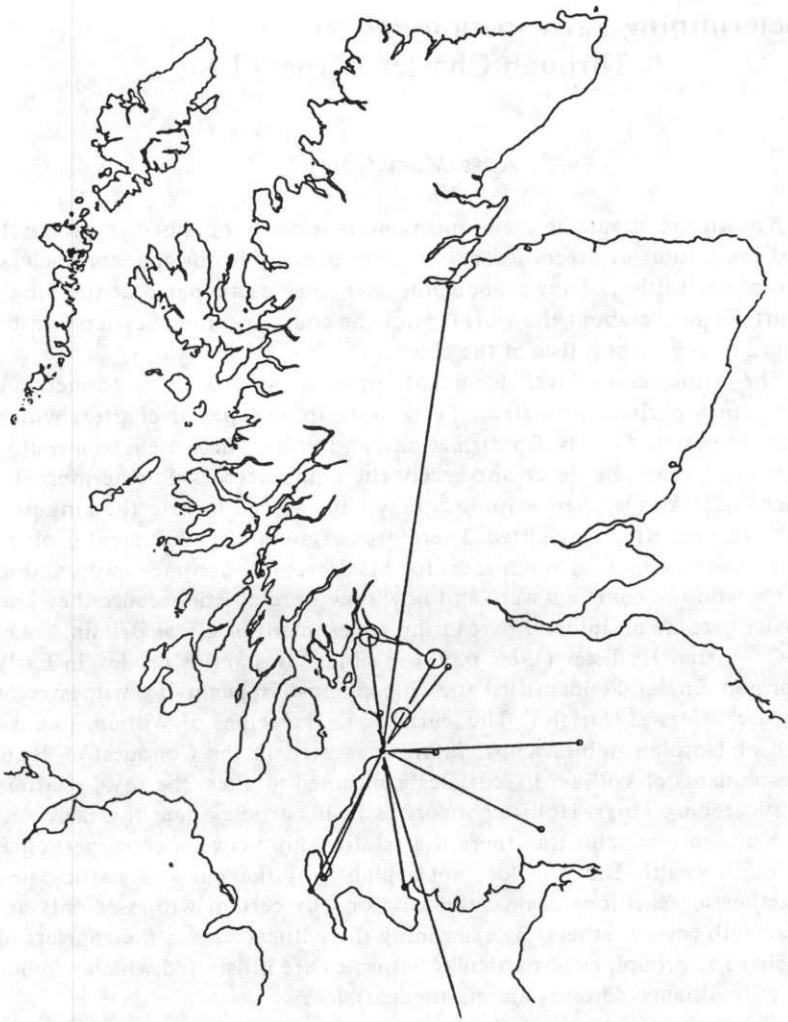


Figure 2 MOVEMENT TO AYR



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Determining Participation Patterns in Medieval Courts Through Charter Witness Lists

Rose Mary Coley *

Knowledge about the great and famous is easily obtained. A monarch and his actions are recorded many times over by historians, chroniclers, and poets. Little is known about the men that participated at the king's court. Evidence about the workings of the court and the courtiers can be found in the witness lists of the charters.

The witnesses to royal documents prior to Magna Carta formed the basis for a parliament system. There were three types of charters which were witnessed: Grants, Confirmations, and Writs. These men, by attesting charters agreed to enforce and accept the king's decrees. Furthermore, by attesting to grants, these witnesses may have agreed to help the king provide the property being gifted. Therefore, a system of government evolved whereby the king sought approval for his decrees. It becomes important to know who the courtiers were and how they were allied, because they gradually become an integral part in the government of Great Britain.

C. Warren Hollister (1986, p. 98) in »Magnates and 'Curiales' in Early Norman England« identified the fifteen most frequent lay witnesses of royal charters as 'curiales'. The 'curiales' in the reigns of William I consisted of Norman nobles whose families assisted in the Conquest of 1066. Descendants of William *Vs* 'curiales' continued to attest the royal charters of succeeding kings. Hollister theorizes in his article about the early AngloNorman magnates that there is a relationship between court participation and wealth. But this does not explain why the 'curiales' participated together in rebellions against the king or why certain witnesses only appear with certain others. By examining the witness lists of the charters of Richard I., groupings of particular witnesses are illustrated which provide clues to alliance patterns among the 'curiales'.

The witness lists of surviving charters provide the identity of court members but only for the days charters were issued. From the charters issued by Richard I. of England(l), we know that court could be held on any day at any place. We also know by comparing charters to Pipe Rolls that most of the charters issued did not survive. Solely using existing char-

* Address all communications to Rose Coley, 5245 Shallowford Road, Lewisville, N. C. 27023, USA.